EPA/ROD/R04-97/208
1997

EPA Superfund
Record of Decision:

CHERRY POINT MARINE CORPS AIR STATION
EPA ID: NC1170027261
OU 45
HAVELOCK, NC
10/09/1996

<IMG SRC 972080> UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 4
ATLANTA FEDERAL CENTER
100 ALABAMA STREET. S.W.
ATLANTA, GEORGIA 30303-3104

OCT 09 1996

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

4WD-FFB

Commanding General
Environmental Affairs Department
PSC Box 8006
Marine Corps Air Station
Cherry Point, North Carolina 28533-0006

SUBJ: Interim Record of Decision
Operable Unit 1
MCAS Cherry Point NPL Site
Cherry Point, North Carolina

Dear Sir:

The U.S. Environmental Protection Agency (EPA) Region 4 has reviewed the above subject decision document and concurs with the selected remedy for the Interim Remedial Action at Operable Unit One.

The selected remedy targets the most highly-contaminated area in the surficial aquifer, where there is evidence of downward migration. By addressing this contamination, the selected remedy would significantly reduce the total mass of OU1 groundwater contamination and reduce the potential for migration of contaminants, (i.e., volatile organic compounds(VOCs)), in the Naval Aviation Depot area's surficial aquifer to the underlying Yorktown aquifer. Remedial activities for the groundwater remaining at OU1 will be more completely addressed by the comprehensive RI/FS for OU1.

The major components of the selected interim remedy consist of extraction pretreatment, and discharge to the sewage treatment plant or the industrial wastewater treatment plant, handling solids generated, monitoring groundwater and pretreated water and 5-year site review. This remedial action is protective of human health and the environment, complies with Federal and State requirements that are legally applicable or relevant and appropriate to the remedial action and is cost effective.

<IMG SRC 97208A>

Richard D. Green
Acting Director
Waste Management Division

cc: Elsie Munsell, Deputy Assistant Secretary of the Navy
Doug Nelson, Cherry Point
Lance Laughmiller, LANTDIV
Linda Raynor, NCDEHNR

INTERIM RECORD OF DECISION
FOR OPERABLE UNIT 1
NADEP CENTRAL HOT SPOT AREA GROUNDWATER

MARINE CORPS AIR STATION
CHERRY POINT, NORTH CAROLINA

Prepared For:
DEPARTMENT OF THE NAVY
ATLANTIC DIVISION
NAVAL FACILITIES
ENGINEERING COMMAND
Norfolk, Virginia

Under the:
LANTDIV CLEAN Program
Contract N62472-90-D-1298

AUGUST 1996

<IMG SRC 97208B>

Brown & Root Environmental
A Division of Halliburton NUS Corporation

ENVIRONMENTAL AFFAIRS, DEPARTMENT
Marine Corps Air Station
Cherry Point, North Carolina 28533-0006

5090/1420
LN
26 Aug 96

From: Environmental Affairs Officer
To: Commanding General, Marine Corps Air Station Cherry Point
Via: Director of Facilities
Chief of Staff

Subj: OPERABLE UNIT 1 INTERIM RECORD OF DECISION

Ref: (a) Staff Judge Advocate ltr 5090 SJA 15 dtd 25 Jul 1996
(b) Associate Counsel, EACO ltr 96-1016.9 dtd 24 Jul 1996

Encl: Interim Record of Decision for Operable Unit 1 NADEP Central Hot Spot Area Groundwater (Brown and Root Environmental, August 1996)

1. The Environmental Affairs Department (EAD) is pleased to present the subject document for your review and approval. The enclosure is the first of its kind for the Air Station and marks significant achievement toward the restoration of the "sins of the past" aboard MCAS Cherry Point. The enclosure identifies the selected environmental remediation alternative for contaminated groundwater located in the vicinity of the Naval Aviation Depot. Selection of the interim remedy was made with local citizen review through public announcement and a public meeting. In addition, this decision is supported by the United States Environmental Protection Agency, Region IV and the North Carolina Department of Environment, Health, and Natural Resources, Division of Solid Waste. As indicated in the references, EAD has coordinated a legal review of the document by the Eastern Area Counsel Office and MCAS Cherry Point Staff Judge Advocate.

2. Your approval will allow us to proceed with construction and operation of a system to remediate the contaminated groundwater. This project has a capital cost of 2.7 million, is funded through the Defense Environmental Restoration Account, and will not result in additional costs to the Air Station.

3. We stand ready to meet with you as required to brief you on the subject and provide any additional information you may require. We respectfully request your approval of this Record of Decision on or before 16 September 96 so that we may remain in compliance with our construction schedule. Please contact me at extension 4562 if you need additional information or wish to discuss this project.

<IMG SRC 97208C>

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1.0 DECLARATION

Site Name and Location

This Interim Record of Decision (Interim ROD) addresses Operable Unit 1 (OU1), Naval Aviation Depot (NADEP) Central Hot Spot Area Groundwater, at the Marine Corps Air Station (MCAS) Cherry Point, North Carolina.

Statement of Basis and Purpose

This decision document presents the selected interim remedial action for OU1, NADEP Central Hot Spot Area Groundwater, at MCAS Cherry Point, North Carolina. Investigation of OU1 was conducted as required by the Resource Conservation and Recovery Act (RCRA) Administrative Order on Consent and consistent with the Installation Restoration (IR) Program and the Comprehensive Response, Compensation and Liability Act of 1980 (CERCLA). The RCRA Administrative Order on Consent is encompassed by the MCAS Cherry Point RCRA Permit. As part of the Focused Remedial Investigation/Feasibility Study (Focused RI/FS) for OU1 Groundwater (B&R Environmental, 1996b), investigation of groundwater identified primary contamination at the NADEP Central Hot Spot Area Groundwater. As used in this Interim ROD, primary contamination is defined as "hot spot" (high levels of) groundwater contamination that has the greatest potential for human or ecological exposures.

On the basis of investigation results, and in accordance with CERCLA, as amended by Superfund Amendment and Reauthorization Act (SARA), and, to the extent practicable, the National Oil and Hazardous Substances Pollution Contingency Plan (NCP) and its related laws and regulations, it is the U.S. Department of the Navy's (DON) decision in concurrence with the U.S. Environmental Protection Agency (USEPA) and the State of North Carolina Department of Environment, Health and Natural Resources (NCDEHNR), that interim remedial action is warranted for contamination at the NADEP Central Hot Spot Area Groundwater. Any final remedial action for groundwater at OU1 will be addressed as part of the comprehensive investigation of OU1. This decision for interim action at the NADEP Central Hot Spot Area Groundwater is based on the Administrative Record for MCAS Cherry Point.

Assessment of the Site

If not addressed by implementing the interim response action selected in this Interim ROD, actual or threatened releases of hazardous substances from the NADEP Central Hot Spot Area Groundwater may present a potential threat to public health or the environment.

Description of Selected Remedy

Renewal action alternatives for the NADEP Central Hot Spot Area Groundwater were evaluated as part of the Focused RI/FS for OU1 Groundwater (B&R Environmental, 1996b). Alternative 4A - Extraction/Pretreatment/Discharge to the Sewage Treatment Plant (STP) or the Industrial Wastewater Treatment Plant (IWTP) was identified as the preferred alternative in the Interim Proposed Remedial Action Plan (interim PRAP). Alternative 4A was determined to exceed the other alternatives in its ability to protect human health and the environment in both the short term and long term, in its ability to comply with applicable or relevant and appropriate requirements (ARARs), and in its implementability. Alternative 4A was also the most cost-effective alternative. After all alternatives were subject to public comment, Alternative 4A became the selected alternative.

The selected remedy targets the most highly contaminated area in the surficial aquifer, where there is evidence that contamination is migrating downward. By addressing this contamination, the selected remedy would significantly reduce the total mass of OU1 groundwater contamination and reduce the potential for migration of contaminants (i.e., volatile organic compounds [VOCs]) in the NADEP Central Hot Spot Area Groundwater surficial aquifer to the underlying Yorktown

aquifer. Remedial activities for the groundwater remaining at OU1 will be more completely addressed by the comprehensive RI/FS for OU1.

The major components of the selected interim remedy include:

- Pumping contaminated groundwater from the area of concern via extraction wells. The area of influence of the extraction system would encompass the area where high VOC concentrations were detected in groundwater.

- Treating extracted groundwater in a treatment system that includes equalization iron oxidation, flocculation/clarification, pressure sand filtration, and air stripping. VOCs would be removed from the extracted groundwater by the air stripper.

- Treating off gases in a catalytic oxidation system. VOCs in the off gases from the air stripper and upstream process tanks would be destroyed in the catalytic oxidation system.

- Discharging pretreated water to the STP. The treatment system would treat groundwater to meet STP pretreatment requirements. While discharge would initially be to the STP, discharge to the IWTP would be reconsidered at a later date should this option become implementable.

- Handling solids generated in the treatment system.

- Monitoring groundwater and pretreated water, and 5-year site review.

Statutory Determination

The selected interim action is protective of human health and the environment in the short term and is intended to provide adequate protection until a final ROD is signed; complies with federal and state ARARs and criteria to be considered (TBCs) directly associated with this action, and is cost-effective. Although this interim action is not intended to address fully the statutory mandate for permanence and treatment to the maximum extent practicable, this interim action does utilize treatment and thus furthers that statutory mandate. Because this interim action does not constitute the final remedy for OU1 groundwater, the statutory preference for remedies that employ treatment that reduce toxicity, mobility, or volume as a principal element, although partially addressed in this remedy, will be fully addressed by the final response action (as part of the comprehensive RI/FS for OU1). Because this remedy does not address all contamination at OU1, a five-year review is included to ensure that the remedy continues to provide adequate protection of human health and the environment within five years after commencement of the remedial action.

Signature and Support Agency Acceptance

<IMG SRC 97208D>

2.0 DECISION SUMMARY

Site Name, Location, and Description

Commissioned in 1942, MCAS Cherry Point is an 11,485-acre military installation located in southeastern Craven County, North Carolina, just north of the town of Havelock. The MCAS Cherry Point mission is to maintain and support facilities, services, and material of a Marine Aircraft Wing, or units thereof, and other activities and units as designated by the Commandant of the Marine Corps in coordination with the Chief of Naval Operations. Figure 1 shows the location of MCAS Cherry Point.

This Interim ROD addresses groundwater contamination at OU1, in the vicinity of the NADEP. OUI is located in the southwestern portion of MCAS Cherry Point. The location of OU1 at MCAS Cherry Point is shown in Figure 1. Figure 2 shows the site map for OU1. The NADEP, located in the east-central portion of OU1, is a large aircraft assembly and repair complex. Groundwater contamination in the vicinity of the NADEP, referred to as the NADEP Central Hot Spot Area Groundwater, is addressed by the interim remedial action presented in this Interim ROD. This hot

spot is shown in Figure 3, and its areal extent is defined by the total chlorinated VOC concentration contours above 1000 micrograms per liter (ug/l). Although part of OU1, Site 16 is not addressed in this Interim ROD. Site 16 is currently being addressed as another hot spot separate from the NADEP Central Hot Spot Area.

Site History and Enforcement Activities

Investigations at MCAS Cherry Point are conducted under the U.S. Department of Defense (DOD) IR Program and the Navy Assessment and Control of Installation Pollutants (NACIP) Program, which commenced in 1980. The IR/NACIP Programs parallel CERCLA (otherwise known as Superfund) and are designed to identify contamination at Navy and Marine Corps lands/facilities resulting from past operations and to institute corrective measures, as needed.

In 1989, the Navy entered into a RCRA Administrative Order with the USEPA to investigate 32 sites at MCAS Cherry Point. The RCRA Order on Consent is encompassed by the MCAS Cherry Point RCRA Permit. In December 1994, MCAS Cherry Point was listed on the National Priorities List (NPL), which was established under CERCLA. As a result, IR investigations are being conducted to meet the requirements of both RCRA and CERCLA.

For investigative purposes, the 32 sites at MCAS Cherry Point have been divided into 12 operable units (OU1 through OU11, and OU13). An additional operable unit, OU12, has been deferred to the State of North Carolina Underground Storage Tank Program. Between 1985 and 1995, at OU1, various investigations including a Focused RI/FS for groundwater have been conducted. More than 300 locations at OU1 have been sampled for groundwater at least once during this period. Analysis of this data was evaluated in the Focused RI/FS and four hot spot areas were identified. Groundwater contamination at one of them, the NADEP Central Hot Spot Area Groundwater, is the subject of this Interim ROD. (The other three hot spot areas will be addressed at a later date, separately or as part of the comprehensive RI/FS for OU1. The comprehensive RI/FS for OU1 will address all media at OU1.)

Chlorinated VOCs and petroleum-related VOCs detected at high concentrations in the NADEP Central Hot Spot Area Groundwater, probably resulted from activities at

- Site 15 - Area and Ditch Behind NADEP,
- Site 40 - NADEP Former Drum Storage Area,
- Site 42 - IWTP
- Site 47 - Industrial Sewer System (or Industrial Area Drainage System),
- Site 51 - Building 137 Plating Shop,
- Site 52 - Building 133 Plating Shop and drainage ditch, and
- Tank farms and underground storage tank (UST) sites located within OU1.

Efforts have been undertaken by MCAS Cherry Point to limit continued contaminant migration at each of these possible source areas. These efforts include modifying current-day operations at the NADEP to limit the use of chlorinated solvents (i.e., VOCs); closing or discontinuing use of Sites 15, 40, 51, and 52; conducting remedial activities conducted at or planned for Sites 40, 47, 51, and 52; repairing leaking underground industrial pipelines at the NADEP; and removing USTs within OU1 where evidence of leakage existed.

In addition to the IR activities, some sites at MCAS Cherry Point have been investigated as part of the Navy's Base Realignment and Closure (BRAC) Program. These sites were investigated to determine if environmental contamination exists that could impact construction and long-term use activities that are planned for these sites.

Highlights of Community Participation

A history of community relations at MCAS Cherry Point is presented in the Community Relations Plan for MCAS Cherry Point (B&R Environmental, 1996a). Community participation has been and continues to be promoted at MCAS Cherry Point through public work, Technical Review Committee/Restoration Advisory Board (TRC/RAB) meetings, public meetings, fact sheets, public notices, public comment periods, newspaper advertisements, and community interviews.

The Focused RI/FS Report OU1 Groundwater has been available since February, 1996 and Interim PRAP for NADEP Hot Spot Area Groundwater was released to the public on June 18, 1996. These two

documents are available to the public in both the Administrative Record and the Information Repositories maintained at the MCAS Cherry Point Library and Havelock Public Library. The notice of the availability of these two documents was published in the Carteret County News-Times and the Havelock News on June 5, 1996 and in the Washington Daily News, the Kinston Free Press, the Jacksonville Daily News, the Sun Journal and the Windsock on June, 6, 1996. The public comment period began on June 18, 1966 and lasted 30 days, during which time a public meeting was held. Responses to comments received during this period are included in the Responsiveness Summary, which is part of this Interim ROD. In addition, community response to the selected remedy, as well as the other alternatives evaluated, is addressed under the community acceptance criteria in the comparative analysis section of this Interim ROD.

This decision document presents the selected interim remedial action for OU1, NADEP Central Hot Spot Area Groundwater, chosen in accordance with CERCLA, as amended by SARA, and, to the extent practicable, the NCP. The decision for this site is based on the Administrative Record.

The Administrative Record and Information Repositories are located at:

MCAS Cherry Point Library
PSC Box 8019
Cherry Point, North Carolina 28533-0019
(919) 466-3552

Hours: Mon - Thur 9:00 am - 9:45 pm
Fri 9:00 am - 5:45 pm
Sat 10:00 am -3:45 pm
Sun 1:00 pm - 8:45 pm

Havelock Public Library
300 Miller Boulevard
Havelock, North Carolina 28532
(919) 447-7509

Hours: Mon - Fri 10:00 am -8:00 pm
Sat 10:00 am - 1:00 pm
Sun Closed

Scope and Role of Operable Unit/Interim Action

Sites at MCAS Cherry Point are organized into 13 OUs. The interim remedial action addressed in this Interim ROD is for activities at OU1. Groundwater at OU1 was found to be contaminated and four hot spot areas were identified in the Focused RI/FS Report. This Interim ROD addresses contamination in the NADEP Central Hot Spot Area Groundwater. The three other hot spot areas will be addressed at a later date, separately or as part of the comprehensive RI/FS for OU1.

Surficial groundwater contamination has apparently migrated to the underlying Yorktown aquifer in the vicinity of the NADEP Central Hot Spot Area. Although the surficial aquifer and underlying Yorktown aquifers are not current potable water sources, the deeper underlying Pungo River and Castle Hayne aquifers could eventually be affected. The Castle Hayne aquifer is the drinking water source for MCAS Cherry Point and surrounding communities. The objective of this interim action is, therefore, to protect the underlying aquifers from groundwater contamination migrating from the surficial aquifer. This interim action focuses on extracting (pumping) and treating the most highly contaminated area in the overlying surficial aquifer (the NADEP Central Hot Spot Area Groundwater) where there is evidence that contanmination is migrating downwards.

The concentration of contaminants in the NADEP Central Hot Spot Area Groundwater is significantly higher than the remainder of the groundwater plume. Therefore, removal of contamination from the area of concern is expected to significantly reduce the total mass of OU1 groundwater contamination. Furthermore, much of the remaining groundwater contamination in the vicinity of the NADEP is upgradient of the proposed interim groundwater extraction system so it should ultimately be captured as groundwater flows naturally through the area. However, remedial activities for the remaining groundwater contamination will be more completely addressed by the comprehensive RI/FS for OU1. In addition remedial goals for groundwater, which are not part of this interim action, will be set as part of the comprehensive RI/FS for OU1.

A design pumping rate of 100 gallons per minute (gpm) was established to extract the most highly contaminated groundwater within the NADEP Central Hot Spot Area. To some extent, this extraction system will also reverse the flow of groundwater from the surficial to the Yorktown aquifer. Considering the uncertainties of future OU1 activities for groundwater, the system includes additional capacity. In the future, pumping rates may be decreased or increased for the proposed extraction wells, or additional extraction wells may be added to the system.

Site Characteristics

The NADEP Central Hot Spot Area Groundwater is located in the central portion of OU1 near Building 133, and determined to occupy approximately 0.07 square miles (45 acres). The most prevalent analytes that define the plume(s) of contaminated groundwater in the area of concern consist of benzene (maximum concentration of 1780 ug/l) and chlorinated VOCs, in particular, trichloroethene (TCE) (maximum concentration 2600 ug/l), vinyl chloride (maximum concentration 10,000 ug/l), and 1,2-dichloroethene (1,2-DCE) (maximum concentration 16,700 ug/l). Additionally, TCE and 1,2-DCE have apparently migrated to the underlying Yorktown aquifer. Free product (concentrated pockets of contaminants) in the surficial aquifer is floating on top of the groundwater within the NADEP Central Hot Spot Area, near Building 133. These pockets, primarily JP-5 fuel oil, are being addressed under current projects. Figure 3 shows the area of concern defined by the total chlorinated VOCs contours. Areas where the total chlorinated VOC concentration is above 1000 ug/l are considered hot spot areas. A summary of analytical results for groundwater in the NADEP Central Hot Spot Area is presented in Table 1. Aside from VOCs, other constituents including metals and semivolatile organic compounds (SVOCs) were detected sporadically and at relatively low concentrations.

As identified previously, several sites may have contributed to the groundwater contamination at the NADEP and are described below. Contamination from these sources has been significantly reduced.

Site 15 - Area and Ditch Behind NADEP was used for disposal of wastes from the NADEP. The site consists of approximately 25 acres between the NADEP and Runway 5. From the 1940s, until 1975, wastes generated in the NADEP were washed down floor drains and discharged to the ditch that flows to Schoolhouse Branch, which is a tributary of Slocum Creek. The practice continued until the IWTP was completed in 1975. The wastes generated at the NADEP include petroleum/oil/ lubricants (POL), organic solvents, cyanides, and metals.

Site 40 - NADEP Former Drum Storage Area was used from 1979 until 1986 to store hazardous wastes generated during manufacturing operations in the NADEP. Prior to 1984, the area was used to store spent organic solvents, paint stripping solutions, corrosion preventative compounds, cyanide wastes, and sandblast residue contaminated with heavy metals. After 1984, the area was used exclusively to store sandblast residue and wastes. Between 1992 to 1993, this area was remediated and closed under North Carolina State authority.

Site 42 - IWTP treats waste generated by industrial activities (including those at the NADEP) such as metal plating, painting, and aircraft and vehicle maintenance, as well as collected storm water from throughout the base. The system is composed of various processes designed to treat 0.65 million gallons per day of wastewater. It also serves as a pretreatment unit for wastewater ultimately discharged to the STP. Residues from the IMP treatment operations are disposed off site at a commercial hazardous waste facility. The IWTP has recently been upgraded.

Site 47 - the Industrial Sewer System (or Industrial Area Drainage System) connects the industrial areas of the MCAS Cherry Point with the IWTP. Leaks have been detected at several locations, and necessary repairs have been made or are underway.

Site 51 "Building 137 Plating Shop and Site 52 - Building 133 Plating Shop and drainage ditch were built in 1942 for plating operations such as acid rinses, chromic dips, and cadmium plating. Each shop features a concrete and terra cotta sump approximately two and a half feet below the floor of each building, with concrete piers spaced throughout each sump for supporting tanks and plating equipment. The sumps drain to Site 47, which leads to the IWTP. The plating shops operated from 1942 to 1990 when they were formally closed and plating operations were moved to a new location. The drains from the sumps to the IWTP were plugged in 1987. The plating shops are presently being demolished.

Tank farms and various UST sites are located within OU1. Tank contents include fuel and lubricants, jet propulsion fuel JP-5, Varsol (a solvent hydrocarbon of lower weight than kerosene), waste oil, and diesel fuel. Problem tanks have since been removed where evidence of leakage existed.

Two groundwater formations, are key areas of investigation at the NADEP Central Hot Spot Area: the surficial aquifer and the Yorktown aquifer. The surficial aquifer receives groundwater

through infiltration from precipitation (i.e., rain, snow). This groundwater generally flows west toward the East Prong of Slocum Creek. However, to the north and northwest of Building 133, surficial groundwater locally flows toward Sandy Branch tributaries.

Groundwater to the Yorktown aquifer is primarily supplied from precipitation infiltration in outcrop (where bedrock peaks above the ground surface) areas, and through leakage from the overlying surficial aquifer. Groundwater from the Yorktown aquifer discharges to the larger surface water bodies present in the area, including Sandy Branch, an intermittent stream that runs through the northern edge of the IWTP and alongside of the Site 16 landfill before meeting the East Prong of Slocum Creek at the northwestern tip of the landfill. Sandy Branch is not used for drinking or swimming, but is considered suitable for fish and wildlife propagation, agriculture, fishing, and other recreational activities.

Although not studied as part of OU1 field investigations, significantly below the Yorktown aquifer is the Castle Hayne aquifer, from which MCAS Cherry Point and surrounding communities derive their drinking water. The Castle Hayne aquifer underlies the Pungo River aquifer, which underlies the Yorktown aquifer. Six water supply wells, set in the Castle Hayne aquifer, are located within our nearby OU1; however, only one of these wells (MCAS-15), located west of the NADEP Central Hot Spot Area near Site 16, is used for drinking water. No Castle Hayne drinking water wells are located directly in the vicinity of the area of concern. The supply wells located in the NADEP (PH1098[N2], PH1099[N3], and PH3990[N1]) have either been closed or are used for nonpotable water supply only. All of these wells are set approximately 200 or more feet below the vertical depth of the NADEP Central Hot Spot Area.

The groundwater extraction system included in Alternative 4A is designed to extract the most highly contaminated surficial groundwater within the NADEP Central Hot Spot Area to protect the underlying aquifers from contamination migrating from the surficial aquifer. The groundwater treatment system would remove the contaminants of concern, VOCs, via air stripping with catalytic oxidation of off gases, prior to discharge of the pretreated groundwater to the STP (or the IWTP, if this option becomes implementable in the future). While groundwater contamination outside of the area of concern (particularly upgradient) may be extracted and treated as part of this interim action, the remediation endpoints for groundwater at OU1 will be identified as part of the comprehensive RI/FS for OU1.

Summary of Site Risks

Although a final risk assessment for OUI has not been developed, a review of available information on OU1 indicates that the primary migration route of most concern for the NADEP Central Hot Spot Area Groundwater is the downward transport of contaminated groundwater from the surficial aquifer to the Yorktown aquifer, and potentially underlying aquifers.

The concentration of contamination in groundwater is expected to decrease with time because many of the sources of groundwater contamination have been significantly reduced. However, because of the high concentrations, relative stability, and high solubility of chlorinated VOCs, groundwater contamination in the NADEP Central Hot Spot Area may present a potential risk to human health or the environment. Comparison of OU1 VOC concentrations with regulatory standards indicate exceedances of several orders of magnitude. Therefore, interim remedial action for the groundwater in the area of concern is required. A final risk assessment for OU1 will be developed in the comprehensive RI/FS for OU1 and based on its results, the remediation endpoints for contaminated groundwater at OU1 will be identified.

Description of Alternatives

The following six alternatives were developed, and screened and evaluated in the Focused RI/FS for contamination at the NADEP Central Hot Spot Area Groundwater:

Alternative 1: Extraction/Direct Discharge to IWTP
Alternative 2: Extraction/Discharge to IWTP with Modification of IWTP Air Stripper
Alternative 3: Extraction Treatment/Discharge to Sandy Branch
Alternative 4: Extraction/Pretreatment/Discharge to IWTP or STP
Alternative 5: Extraction/Iron Filing Dehalogenation/Discharge to IWTP
Alternative 6: In-Situ Sparging

Although the NCP requires a baseline No Action alternative, because this is an interim action, the No Action alternative is deferred to the comprehensive RI/FS for OU1.

Of the above listed alternatives, only Alternative 3 (Extraction/Treatment/Discharge to Sandy Branch) and Alternative 4 (Extraction/Pretreatment/Discharge to IWTP or STP) were retained for detailed analysis. Alterative 1 (Extraction/Direct Discharge to IWTP) was eliminated because of effectiveness concerns related to the need for specialized off-gas controls for the IWTP Air Stripper (with which the IWTP is not presently equipped) to treat the high concentration of contaminants. Alternative 2 (Extraction/Discharge to IWTP with Modification of IWTP Air Stripper) was eliminated because of the high cost of equipping the IWTP Air Stripper with specialized off-gas treatment with minimal to no additional benefits over the other alternatives evaluated. Alternative 5 (Extraction/Iron Filing Dehalogenation/Discharge to IWTP) was eliminated primarily because iron filing dehalogenation is relatively ineffective for 1,2-DCE, a primary contaminant of the NADEP Central Hot Spot Area Groundwater. Alternative 6 (in-Situ Sparging) was eliminated because capture of off gas from the sparging system would be difficult and limited space is available to install the system. Except for Alternative 2 (which is cost prohibitive), the eliminated alternatives may be reconsidered in the future in the comprehensive RI/FS for OU1.

Based on the technology employed to remove/treat the VOCs of concern in groundwater, Alternatives 3 and 4 contain two subalternatives. Alternatives 3A and 4A use air stripping with catalytic oxidation of the air stripper off gas. Alternatives 3B and 4B use enhanced oxidation (i.e., ozone/UV or peroxide/UV).

For these alternatives (3A, 3B, 4A, and 4B), contaminated groundwater would be extracted to reduce the migration potential of VOCs from the surficial aquifer to the underlying Yorktown aquifer. Extracted groundwater would be transported to the groundwater treatment system by dedicated piping. A brief description of the alternatives evaluated in the detailed analysis of the Focused Ri/FS Report, as well as the estimated costs (based on a flow rate of 40 gpm) to implement the alternative, follows:

Alternative 3A - Extraction/Air Stripping/Liquid-Phase GAC/Discharge to Sandy Branch

Capital Cost: $2.46 million
Annual Operation and Maintenance (O&M): $227,000 per year
30-Year Present Worth: $6.0 million

Components of the groundwater treatment system include equalization, iron oxidation, flocculation/clarification, pressure sand filtration, air stripping, liquid-phase granular activated carbon (GAC) polishing, and solids dewatering with offsite disposal of the solids. Off gases from the air stripper as well as from vents from upstream tanks (including equalization, clarifier, and clarifier overflow tanks) would be vented to an off-gas control system which consists of a catalytic oxidation system. Air stripping would remove most of the VOC concentration; however, liquid-phase GAC is included as a final step to attain stringent surface water discharge standards. Treated water from the treatment system would be discharged to Sandy Branch. Groundwater monitoring and a 5-year site review are also included in this alternative.

Alternative 3B - Extraction/Enhanced Oxidation/Liquid-Phase GAC/Discharge to Sandy Branch

Capital Cost: $2.29 million
Annual O&M: $271,000 per year
30-Year Present Worth: $6.5 million

Components of the groundwater treatment system include equalization, iron oxidation, flocculation/clarification, pressure sand filtration, enhanced oxidation, liquid-phase GAC polishing, and solids dewatering with offsite disposal of the solids. The vents from upstream tanks (including equalization, clarifier, and clarifier overflow tanks) would be connected to a vapor-phase GAC to treat fugitive emissions. Enhanced oxidation would remove most of the VOC concentration; however, liquid-phase GAC is included as a final step to attain stringent surface water discharge standards. Treated water from the treatment system would be discharged to Sandy Branch. Groundwater monitoring and a 5-year site review are also included in this alternative.

Alternative 4A - Extraction/Air Stripping/Discharge to IWTP or STP

Capital Cost: $2.37 million
Annual O&M: $131,000 per year
30-Year Present Worth: $4.44 million

Components of the treatment system include equalization, iron oxidation, flocculation/ clarification, pressure sand filtration, air stripping, discharge of treated water to either the IWTP or the STP, and solids dewatering with offsite disposal of the solids. Off gases from the air stripper as well as from enclosed upstream tanks (including equalization, clarifier, and clarifier overflow tanks) would be vented to an off-gas control system which consists of a catalytic oxidation system. Groundwater monitoring and 5-year site review are also included in this alternative.

Alternative 4B - Extraction/Enhanced Oxidation/Discharge to IWTP or STP

Capital Cost: $2.13 million
Annual O&M: $179,000 per year
30-Year Present Worth: $4.93 million

Components of the treatment system include equalization, iron oxidation, flocculation/ clarification, pressure sand filtration, enhanced oxidation, discharge of treated water to either the IWTP or the STP, and solids dewatering with offsite disposal of the solids. The vents from upstream tanks (including equalization, clarifier, and clarifier overflow tanks) would be connected to a vapor-phase GAC to treat fugitive emissions. Groundwater monitoring and a 5-year site review are also included in this alternative.

Note that the cost estimates and description of the alternatives above are based on treatment systems with a flow rate of 40 gpm. However, as discussed in the Addendum to the OU1 Focused RI/FS Report, subsequent to the generation of extraction rate and cost estimates, testing of the surficial aquifer near the areas of proposed remediation was conducted to provide more accurate information for remedial design purposes (B&R Environmental, 1995). Based on the results of the testing, it was determined that the extraction rate, and therefore flow rate for the treatment systems evaluated, should be increased to 100 gpm to provide adequate capture of the contaminated groundwater in the area of concern. With the exception of additional costs, the increase in flow rate would affect the four alternatives described above equally and would not change the overall description of the alternatives. Estimated costs for each alternative would be higher than those provided above, but costs for each alternative would be expected to increase proportionately.

Summary of Comparative Analysis of Alternatives

The following paragraphs describe the process by which the preferred alternative (4A) was selected over the other viable alternatives (3A, 3B, and 4B). This process involved evaluating the alternatives based on nine criteria and ranking the alternatives in decreasing order, based on which alternative best meets the criteria:

- overall protectiveness,
- compliance with ARARs,
- reduction of toxicity, mobility, or volume through treatment,
- short-term effectiveness,
- long-term effectiveness,
- implementability,,
- cost,
- USEPA/State acceptance,
- and community acceptance.

Table 2 provides a glossary of the above listed evaluation criteria. Table 3 presents the relative ranking of alternatives, which shows that Alternative 4A is ranked number 1 of the nine criteria evaluated.

Overall Protection of Human Health and the Environment

All alternatives would provide an adequate level of protectiveness, especially considering that

the remediation is an interim action. However for Alternatives 4A and 4B, discharge to either the IWTP or the STP may be more protective than direct discharge to Sandy Branch (Alternatives 3A and 3B) because discharge to either the IWTP or the STP offers additional buffering and treatment of water in a permitted treatment facility prior to discharge into the environment. In addition, Alternatives 3A and 3B may not be able to comply with stringent surface water discharge standards for toxic metals. Even though the sequence of treatment represents the best conventional technologies, several potentially applicable discharge standards are well below chemical detection limits and therefore may be difficult to attain, especially during startup.

All four alternatives would reduce the VOC concentrations in the hot spot area and thereby reduce VOC migration into the Yorktown aquifer. However, using a more conventional and proven technology (namely, air stripping) with catalytic oxidation of the off-gas emission, in Alternatives 3A and 4A, is expected to be more protective than using enhanced oxidation in Alternative 3B and 4B. Relative to off-gas emissions controls, the air stripping alternatives (3A and 4A) are slightly more protective than the enhanced oxidation alternatives (3B and 4B), because vinyl chloride fugitive emissions from the tank vents may not be adequately captured by the vapor-phase GAC used in Alternatives 3B and 4B.

Compliance with ARARs

The principal ARARs address discharge of treated groundwater and air emissions. Because this is a Superfund (CERCLA) site, compliance with technical requirements for permits (i.e., discharge or emission standards) apply, but administrative requirements for permits do not (i.e., applying for and receiving actual permits are not required).

Alternatives 3A and 3B would require a more extensive groundwater treatment system to achieve the discharge standards for Sandy Branch than for the IWTP or the STP discharge options for Alternatives 4A and 4B. For discharge to Sandy Branch, the treatment systems in Alternatives 3A and 3B are designed based on the most stringent discharge standards to protect people drinking the water and organisms that live in it. Alternatives 3A and 3B may have a problem attaining acceptable effluent concentrations for toxic metals based on these stringent discharge standards, especially during startup. Actual discharge standards would be determined by the technical requirements of National Pollutant Discharge Elimination System (NPDES) for discharge to Sandy Branch. Alternatives 4A and 4B would meet the IWTP or STP pretreatment standards.

Air emissions from Alternatives 3A and 4A would be below the North Carolina Air Toxics Limits for TCE, dichloroethenes, vinyl chloride, and benzene because the air stripper emissions and off gases from the upstream tank vents would be captured and treated by catalytic oxidation. Although air emissions from Alternatives 3B and 4B should be below these standards, there is a potential that vinyl chloride emissions from the upstream tank vents may exceed the North Carolina Air Toxics Limit, presenting a potential hazard.

Reduction of Toxicity, Mobility, or Volume Through Treatment

All of the alternatives are similar in their ability to achieve the removal/destruction of VOCs. In Alternatives 3A and 4A, VOCs would be removed by air stripping and destroyed in the catalytic oxidation system. In Alternatives 3B and 4B, VOCs would be destroyed by enhanced oxidation. The overall reduction of toxicity is similar and any differences between the alternatives are expected to be minor. Similar quantities of total VOCs would be removed from the groundwater in all alternatives. Spent (used) liquid-phase GAC from polishing treatment of water prior to discharge to Sandy Branch would be generated for Alternatives 3A and 3B and spent vapor-phase GAC from the treatment of tank vent gases would be generated for Alternatives 3B and 4B. In Alternatives 3A and 4A, vapor-phase GAC would not be used, because off gases would all be treated by catalytic oxidation to form innocuous (nonhazardous) products. All alternatives are expected to generate nonhazardous sludge filter cake.

Short-Term Effectiveness

Alternatives 3A and 4A featuring air stripping with off-gas controls would be more effective in the short term than Alternatives 3B and 4B featuring enhanced oxidation. The most significant difference in short-term effectiveness concerns the types of hazards that would require greater worker protection, housekeeping, and care in the operation of the treatment plants.

Alternatives 3B and 4B may expose the workers to vinyl chloride from fugitive tank emissions because of in inadequate capture in the vapor-phase GAC, unlike Alternatives 3A and 4A, which treat all off gases (including fugitive emissions) by catalytic oxidation. However, these fugitive emissions from upstream tanks are expected to be minimal. Alternatives 3B and 4B would require great care in operating the VOC treatment system because of the high electrical power used in enhanced oxidation and the potential for explosion by the mishandling of hydrogen peroxide. Alternatives 3A and 4A would also require care in operating the catalytic oxidation system (for off-gas control) because of the high temperatures (typically exceeding 800 degrees F) and the electrical power requirements. For all alternatives, proper ventilation of the sludge dewatering room is required protect personnel.

If contaminant concentrations decrease to the point where the groundwater meets IWTP/STP pretreatment standards without treatment, or air emissions decrease to acceptable concentrations without off-gas controls, direct discharge to the IWTP or the STP could be employed or the off-gas control system could be removed. Therefore, short-term effectiveness concerns, particularly for Alternative 4A, may be reduced in the future.

Long-Term effectiveness

All of the alternatives are intended as interim actions and therefore long-term effectiveness is not fully addressed. Long-term effectiveness wilt be fully addressed in the comprehensive RI/FS for OU1. However, some long-term effectiveness concerns for the NADEP Central Hot Spot Area Groundwater are related to the catalytic oxidation system for Alternatives 3A and 4A and the enhanced oxidation system for Alternatives 3B and 4B. Trained operators and more intensive maintenance may be required to effectively operate the catalytic oxidation system or the enhanced oxidation system. These long-term effectiveness concerns would be less significant if future contaminant concentrations decrease to the point where the groundwater does not need pretreatment to be discharged to the IWTP or the STP or an off-gas control system is no longer necessary to meet air emission standards.

The effluent monitoring requirements for discharge to surface water in Alternatives 3A and 3B are expected to be more extensive and may require weekly to monthly sampling and analysis for a complete suite of parameters to ensure standards were being met for discharge to Sandy Branch. The effluent monitoring requirement for discharge to the IWTP or the STP in Alternatives 4A and 4B would be limited to monthly sampling and analysis of a limited list of parameters to ensure pretreatment standards were being met.

Implementability

All alternatives are implementable. However, the implementability requirements differ among the alternatives. Concerns include uncertainties involving treatability studies for enhanced oxidation (Alternatives 3B and 4B), meeting the substantive requirements for a permit to discharge to surface water (Alternatives 3A and 3B), and availability of capacity of the IWTP or the STP (Alternatives 4A and 4B).

Because of the high concentration of VOCs, some treatability testing is anticipated for the enhanced oxidation system for Alternatives 3B and 4B to determine the system effectiveness and the design criteria for a full-scale system. Alternatives 3A and 4A are unlikely to require these studies.

Alternatives 3A and 3B would require the establishment of an outfall at Sandy Branch and compliance with the substantive discharge permitting requirements. Delays could be incurred in negotiating these discharge standards with the regulatory agencies.

The greatest implementability concern for Alternatives 4A and 4B is with the IWTP because of the unproven operating experience of recent upgrades in the system and problems with the IWTP flow capacity during inflow from heavy precipitation. Therefore, discharge to the STP is currently more implementable than discharge to the IWTP.

Cost

The 30-year present-worth cost for Alternatives 4A is the lowest, followed by Alternatives 4B, 3A, and 3B. While capital costs of all alternatives are relatively similar, O&M costs for the

alternatives increase in the same order as present-worth costs. If contaminant concentrations decrease to the point where the air emissions from the air stripper in Alternatives 3A and 4A would reach acceptable concentrations without off-gas controls or concentrations decrease to the point where direct discharge to the IWTP or the STP (Alternatives 4A and 4B) could be employed, O&M costs for the affected alternatives would be lower.

As discussed previously, because of the increase in anticipated flow rate, the estimated costs associated with each alternative will be higher than presented in the Focused RI/FS Report and this Interim PRAP. This increase in pumping rate affects all the alternatives similarly, and therefore the relative ranking of alternatives based on cost will not change. Revised costs for Alternative 4A based on the increased (100 gpm) flow rate are provided in the Addendum to the Focused RI/FS Report.

USEPA/State Acceptance

The USEPA and NCDEHNR concur with the evaluation of alternatives and the selection of the preferred alternative. USEPA and State comments have been incorporated in the Final Focused RI/FS and the Interim PRAP.

Community Acceptance

The community has been participating in the alternative selection process through the TRC/RAB meetings. The TRC/RAB members support the selection of the preferred alternative. In addition, a public comment period for the Focused RI/FS Report for OU1 Groundwater and the Interim PRAP for NADEP Hot Spot Area Groundwater began on June 18, 1996 and lasted 30 days. During this comment period, public comments on these reports, in particular all the alternatives evaluated and the selection of the preferred alternative were solicited. No public comments were received on the evaluation of alternatives and the selection of the preferred alternatives.

Further discussion of public participation during the public comment period is included in the Responsiveness Summary, which is part of this Interim ROD.

Selected Remedy

Based on consideration of the requirements of CERCLA, the detailed analysis of the alternatives using the nine criteria, and public comments, the Navy, the USEPA, and the NCDEHNR have determined that Alternatives 4A is the most appropriate interim remedy for the OU1 NADEP Central Hot Spot Area Groundwater at MCAS Cherry Point.

The major components of the Alternative 4A - Extraction/Air Stripping/Discharge to IWTP or STP include:

- Groundwater Extraction System

  I. Extraction wells and pumps placed in the Building 4224/Building 133 Area.
  II. Extraction wells and pumps placed in the IWTP Area.
  III. Extraction wells and pumps placed in the Building 159 Area

- Groundwater Treatment System

  I. Equalization
  II. Iron oxidation
  III. Flash mixing/Flocculation/Clarification
  IV. Pressure Sand Filtration
  V. Air Stripping
  VI. Discharge to the STP initially with potential for future discharge to the IWTP.
  VII. Off-gas emissions control and fugitive tank emissions by catalytic oxidation
  VIIII. Solids Handling

The groundwater extraction wells would be placed at various locations in the NADEP Central Hot Spot Area, as shown in Figure 3. All wells shown may not be required. The conceptual process

flow diagram for the groundwater treatment system is shown in Figure 4. Contaminated groundwater would be extracted from each well, and the combined flow would be conducted through a header to the groundwater treatment system. The groundwater extraction system piping would be double-walled pipe, since the contaminated groundwater may be considered to contain a RCRA hazardous waste by characteristic. The groundwater treatment system is expected to be located adjacent to the IWTP, as shown in Figure 3. The conceptual design of the treatment system is based on a flow rate of 100 gpm. The extraction system will be flexible such that flow rates at each well can be adjusted and/or additional wells can be added, including from other OU1 areas, as long as the 100 gpm total flow rate is not exceeded.

The designed system is presented below; specific sizing, chemical usage, and sludge production rates would be confirmed during the remedial design.

The groundwater flows and concentrations would be homogenized in an equalization tank equipped with mixer. The pH of the equalized groundwater is expected to be 6 to 7 and the groundwater is expected to contain sufficient iron to warrant the adjustment and precipitation, to avoid fouling of downstream processes, particularly the air stripper. In the equalization tank, caustic soda would be added for pH adjustment, and iron oxidation would occur via aeration and/or potassium permanganate addition. Thus, the iron would be rendered insoluble and converted to a precipitate. To some degree dissolved toxic metals, would be removed with the iron.

The water would then be flash mixed with a coagulant/flocculant polymer in a flash-mixing tank, flocculated, and allowed to undergo sedimentation in a clarifier to remove the suspended solids and precipitates. Approximately 70 percent of the incoming total suspended solids (TSS) (including newly formed iron hydroxide and manganese oxides) would be removed in a clarifier. These solids would undergo air sparging to remove any adsorbed VOCs, then would be blended with the groundwater treatment system effluent, while still attaining TSS pretreatment requirements for the STP. Space will be provided for a future filter press for sludge dewatering should the solids not be blended with the system effluent and require removal instead.

The overflow from the clarifier would be filtered through a deep-bed sand filter, to produce relatively particulate-free water. The sand filter would also remove some of the particulate toxic metals. The filtered water would then be treated to remove the volatile organics by air stripping, and collected in an effluent holding tank prior to discharge to the STP (or the IWTP should this option become implementable in the future).

The air stripper would be a packed tower. All the VOCs of concerns expected to be effectively removed, from the groundwater and carried into the off gas from the air stripper.

Off gases from the air stripper as well as from enclosed upstream process tanks including the equalization tank, the clarifier, and the clarifier overflow tank, would be vented to the off-gas control system. The off-gas control system would consist of a catalytic oxidation system operating at temperatures exceeding 800 degree F. The catalytic oxidation system is intended to reduce the mass emission rates of the dichloroethenes, vinyl chloride, and benzene to less than their respective State of North Carolina Air Toxics Limits (limits considered protective).

Contaminant plume monitoring would include semiannual sampling of approximately 15 existing monitoring wells, followed by analysis for TCL volatile organics. After performance testing during startup, the influent to and the effluent from the groundwater treatment system would be sampled once a month and analyzed for TCL volatile organics and TSS to ensure compliance with the STP (or potentially IWTP, in the future) pretreatment requirements. Other water quality parameters, such as pH, will be monitored as well. Also, after an extended period of time, the concentration of VOCs in the influent to the groundwater treatment system may be equal to or less than the pretreatment requirements for discharge. In this case, the groundwater treatment system could be shut down and the groundwater collection system could be discharged directly to the STP (or IWTP). Groundwater modeling and fate and transport modeling are required to predict decreases in contaminant concentrations with time. Modeling efforts are planned in support of the comprehensive OU1 RI/FS. Also, sampling and analysis of the groundwater treatment system would be part of the performance monitoring aspect of the pump and treat remediation. Therefore, actual operating data would be obtained to determine whether influent concentrations are consistently below discharge limits. Ultimately, the decision regarding when to shut down treatment operations will be made on the basis of actual performance data and cannot be tied into a pre-established or modeled schedule.

Capital costs include costs for treatment plant site preparation, equipment (extraction wells, pumps, treatment system tanks), piping and instrumentation, foundation and structural work, and electrical materials (wiring, switches, cables, lighting). Total capital costs are estimated at approximately $2.8 million: O&M costs include costs for the operation of the treatment plant, annual groundwater sampling, monthly sampling of treatment plant effluent, and 5-year site review and are estimated at approximately $180,000. Present worth analysis for a 30-year operation period is approximately $5.6 million. A summary of estimated costs for the selected alternative is provided in Table 4.

Statutory Determinations

A selected remedy should satisfy the statutory requirements of CERCLA Section 121 which include: (1) be protective of human health and the environment; (2) comply with ARARs; (3) be cost-effective; (4) utilize permanent solutions and alternative treatment technologies or resource recovery technologies to the maximum extent practicable; and (5) satisfy the preference for treatment that reduces toxicity, mobility, or volume as a principal element, or provide an explanation as to why this preference is not satisfied. The interim action is not designed or expected to be final, but the selected remedy represents the best balance of trade-offs among alternatives with respect to pertinent criteria, given the limited scope of the action. The preference for treatment will be addressed in the final decision document for OU1. The evaluation of how Alternative 4A satisfies these requirements for the NADEP Central Hot Spot Area groundwater is presented below.

Protection of Human Health and the Environment

Alternative 4A would provide protection of human health and the environment through extraction and treatment of contaminated groundwater. The groundwater extraction system would mitigate the potential for groundwater to migrate from the surficial aquifer to underlying aquifers. Groundwater would be treated to meet STP (or potentially IWTP in the future) pretreatment requirements via air stripping (a proven technology for VOC removal) and off gases would be destroyed in a catalytic oxidation system.

Compliance with ARARs

Alternative 4A would comply with the ARARs identified in the Focused RI/FS for OU1. ARARs of concern are related to discharge of treated groundwater and to control air emissions. Groundwater would be treated to meet the STP (or potentially IWTP, in the future) pretreatment standards. The off gases and upstream tank vents would be captured and treated by catalytic oxidation to below North Carolina Air Toxics Limits. A summary of ARARs and TBCs is presented in Table 5.

Cost-Effectiveness

Alternative 4A would be the most cost-effective of the alternatives considered, with the lowest 30-year present worth cost of the four alternatives evaluated in the detailed analysis.

Utilization of Permanent Solutions and Alternative Treatment Technologies

Alternative 4A would represent a permanent treatment solution for VOCs in groundwater at the OU1 NADEP Central Hot Spot Area Groundwater. However, as this is an interim action, this criterion will be further addressed as part of the comprehensive RI/FS for OUl.

Preference for Treatment as a Principal Element

Alternative 4A would satisfy the preference for treatment as a principal element since the VOCs in the groundwater would be removed by air stripping and destroyed by catalytic oxidation.

Explanation of Significant Changes

To fulfill the requirements of CERCLA section 117(b), this Interim ROD must document and discuss the reasons for any significant changes made to the selected remedy from the time the Focused RI/FS Report and Interim PRAP are released for public comment to the final selection of the remedy. The Interim PRAP for the NADEP Central Hot Spot Area groundwater was released for public

comment on June 18, 1996. The Interim PRAP identified Alternative 4A - Extraction/Air Stripping Discharge to IWTP or STP as the preferred alternative. All written and Verbal comments submitted during the public comment period were reviewed. Upon review of these comments, it was determined that no significant changes to the remedy, as originally identified in the Interim PRAP, were necessary.

3.0 RESPONSIVENESS SUMMARY

The Responsiveness Summary is a concise and complete summary of significant comments received from the public and includes responses to these comments. The Responsiveness Summary was prepared after the comment period in accordance with guidance in "Community Relations in Superfund: A Handbook" (OSWER Directive 9230.0-3B, January 1992). The responsiveness summary provides the decision-maker with information about the views of the community. It also documents how the agency has considered public comments during the decision-making process and provides answers to major comments. The Responsiveness Summary consists of three sections, as follows.

Overview

The Interim Proposed Remedial Action Plan (PRAP) identifies the preferred remedy for Operable Unit 1 (OU1), Naval Aviation Depot (NADEP) Central Hot Spot Area Groundwater, at the Marine Corps Air Station (MCAS) Cherry Point, North Carolina. The remedy identified is extraction and pretreatment of contaminated groundwater and discharge of treated water to the Sewage Treatment Plant (STP) or Industrial Wastewater Treatment Plant(IWTP) (Alternative 4A). The selected remedy specified in the Interim Record of Decision (ROD) for OU1 NADEP Central Hot Spot Area Groundwater is the same as the preferred remedy except that discharge of pretreated water to the STP will initially be considered. Discharge to the IWTP may be reconsidered at a later date should this option become implementable.

Few comments were received during the public comment period, none of which were in support or against the preferred remedy. In addition, no comments on the other alternatives were received during the public comment period.

Background on Community Involvement

Community involvement at MCAS Cherry Point is promoted through the community relations program which includes public meetings, fact sheets, public notices, public comment periods, newspaper advertisements, and community interviews. Although not specifically expressed about OU1, the community in general has expressed concern about groundwater contamination at MCAS Cherry Point and the potential for the contamination to affect local drinking water supplies.

Information on community relations is provided in the Community Relations Plan for MCAS Cherry Point (B&R Environmental, 1996a). Major milestones in the community relations at MCAS Cherry Point are the establishment of the Technical Review Committee (TRC) in 1988, the establishment of two information repositories, and transition from TRC to Restoration Advisory Board (RAB) in 1995. The RAB (formerly TRC) acts as a forum to discuss issues and exchange information between the Navy, Marine Corps, regulatory agencies and the community on environmental restoration issues. The RAB provides an opportunity for community members to participate in the decision-making process by reviewing and commenting on proposed actions involving MCAS Cherry Point. The information repositories are available at Havelock Public Library and MCAS Cherry Point Library. All documents generated through the Installation Restoration (IR) Program are available for public review in the information repositories.

Summary of Comments Received During the Public Comment Period and Agency Responses

The public comment period on the Focused Remedial Investigation/Feasibility Study (RI/FS) and the Interim PRAP was held from June 18 to July 18, 1996. The public meeting was held on June 18, 1996 at Havelock City Auditorium, Havelock, North Carolina. Limited public comments were received and were only received during the public meeting. No written comments were received from the public during the comment period. The transcript of the public meeting is available in the information repositories and is included as Appendix A. A summary of the questions that were asked during the public meeting followed by a response is provided below.

Question: When was the contamination in the groundwater discovered? How was it discovered?

Response: The landfill (Site 16) located in the northeastern portion of OM has been under investigation since 1985. During the investigation of groundwater in the vicinity of the landfill, contaminated groundwater was identified upgradient of the landfill. Further investigation of the groundwater upgradient of the landfill identified other areas of groundwater contamination at OU1, including the NADEP Central Hot Spot Area.

Question: How long do you think the leakage has been going on?

Response: The groundwater contamination is a result of previous activities. Efforts have been undertaken by MCAS Cherry Point to limit continued contaminant migration at the possible source areas. The tanks and pipelines that were found to have been leaking have-been repaired or removed. Other possible source areas have been closed, discontinued or operating practices have been modified.

4.0 ACRONYMS AND ABBREVIATIONS

ARARs	Applicable or Relevant and Appropriate Requirements
BRAC	Base Realignment and Closure
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
1,2-DCE	1,2-Dichloroethene
DOD	U.S. Department of Defense
DON	U.S. Department of the Navy
GAC	Granular Activated Carbon
gpm	gallons per minute
Interim PRAP	Interim Proposed Remedial Action Plan
Interim ROD	Interim Record of Decision
IR	Installation Restoration
IWTP	Industrial Wastewater Treatment Plant
MCAS	Marine Corps Air Station
NACIP	Navy Assessment and Control of Installation Pollutants
NADEP	Naval Aviation Depot
NCDEHNR	North Carolina Department of Environment, Health, and Natural Resources
NCP	National Oil and Hazardous Substance Pollution Contingency Plan
NPDES	National Pollutant Discharge Elimination System
NPL	National Priorities List
O&M	Operation and Maintenance
OUl	Operable Unit 1
POL	Petroleum/oil lubricants
RCRA	Resource Conservation and Recovery Act
RI/FS	Remedial Investigation/Feasibility Study
SARA	Superfund Amendment and Reauthorization Act
STP	Sewage Treatment Plant
SVOC	Semivolatile Organic Compound
TBC	To be considered
TCE	Trichloroethene
TRC/RAB	Technical Review Committee/Restoration Advisory Board
TSS	Total Suspended Solids
ug/l	microgram per liter
USEPA	U.S. Environmental Protection Agency
UST	Underground Storage Tank
VOC	Volatile Organic Compound, VOCs of concern at the NADEP Central Hot Spot Area Groundwater include TCE, 1,2-DCE, vinyl chloride, and benzene

5.0 REFERENCES

B&R Environmental, 1995. "Pump Test Letter Report in Support of OU1 Groundwater Design", Brown & Root Environmental, Pittsburgh, PA, December 21, 1995.

B&R Environmental, 1996a. "Community Relations Plan", Marine Corps Air Station, North Carolina, Brown & Root Environmental, Wayne, PA, January 1996.

B&R Environmental, 1996b. Focused Remedial Investigation/Feasibility Study Report for Operable Unit 1 Groundwater", Marine Corps Air Station, Cherry Point, North Carolina, Brown & Root Environmental, Wayne, PA, February 1996.

TABLE 1

GROUNDWATER STATISTICS AND COMPARISON WITH RISK-BASED CONCENTRATIONS (RBCs) FOR TAP WATER, FEDERAL AND STATE DRINKING WATER STANDARDS
OU1, NADEP CENTRAL HOT SPOT AREA
MCAS, CHERRY POINT, NORTH CAROLINA

Parameter	Frequency of Detection	Minimum Detection	Maximum Detection	Average of Positive Detections	Location of Maximum Detection	Risk-Based Concentration(l)	Federal MCL(2)	North Carolina GWQS(3)
Metals (ug/L)								
Aluminum	3/5	60	8090	2856	16GW11	37000	50 - 200*	
Antimony	1/6	6.1	6.1	6.1	42GW05	15	6	
Arsenic	4/6	2.5	21.2	10.5	16GW11	0.038	50	50
Barium	5/5	41.9	78	65.6	42GW05	2600	2000	2000
Calcium	5/5	8930	65100	39286	16GW11			
Chromium	2/6	25.2	64.8	45	16GW11	37000	100	50
Cobalt	1/5	12.3	12.3	12.3	16GW11	2200		
Copper	2/6	7	46.1	26.6	16GW11	1400	TT	1000
Iron	5/5	905	98400	37341	N2GW27		300*	300
Lead	6/13	2.8	200	40.3	N4HP5	0.0037	TT	15
Magnesium	5/5	2890	18000	7638	N2GW27			
Manganese	5/5	70	621	241	16GW11	180	50*	50
Nickel	1/6	29.3	29.3	29.3	16GW11	730	100	100
Potassium	3/5	959	6870	3513	N2GW27			
Sodium	5/5	6700	22500	13034	N2GW27			
Vanadium	1/5	24.6	24.6	24.6	16GW11	260		
Zinc	1/6	154	154	154	16GW11	11000	5000*	2100
Volatile organics (ug/L)								
1,1,1,-Trichloroethane	1/14	140	140	140	N4HP10	1300	200	200
1,1-Dichloroethane	5/15	5	360	86	N4HP10	810		700
1,1-Dichloroethene	3/15	6	140	51	N4HP10	0.044	7	7
1,2-Dichlorobenzene	10/17	0.73	260	57	N2HP15	270		620
1,2-Dichloroethane	2/16	11	82	47	N2GW17	0.12		0.38
1,2-Dichloroethene (total)	11/18	5	16700	4306	42GW03	55	70	
1,3-Dichlorobenzene	5/13	4	160	49	N2HP15	540		620
1,4-Dichlorobenzene	7/13	13.5	699	127	N2GW24	0.44		75
Benzene	11/20	1.1	1780	196	N2GW24	0.36	5	1
Chlorobenzene	8/19	9.4	730	140	42GW05	39	100	50
Chloroethane	2/13	47.1	47.1	47.1	42GW02	8600		
Cis-1,2-dichloroethene	8/9	65	16700	7869	42GW03	61	70	70
Dichlorodifluoromethane	1/9	150	150	150	N4HP5	390		1400
Ethylbenzene	8/20	0.7	130	45.5	N2HP15	1300	700	29
Methyl tert-Butyl ether	2/5	0.05	76.9	38.5	N2GW24			200
Methylene chloride	1/13	112.5	112.5	112.5	N2GW24	4.1	5	5

TABLE 1

GROUNDWATER STATISTICS AND COMPARISON WITH RISK-BASED
CONCENTRATIONS (RBCs) FOR TAP WATER, FEDERAL AND STATE DRINKING WATER STANDARDS
OU1, NADEP CENTRAL HOT SPOT AREA
MCAS, CHERRY POINT, NORTH CAROLINA

Parameter	Frequency of Detection	Minimum Detection	Maximum Detections	Average of Positive Detections	Location of Maximum Detections	Risk-Based Concentration (1)	Federal MCL(2)	North Carolina GWQS(3)
Tetrachloroethene	1/15	43	43	43	N4HP10	1.1	5	0.7
Toluene	8/20	2.6	150	31	N2GW24	750	1000	1000
Trans-1,2-dichloroethene	3/12	3	5	4	42GW05 / N4HP10	120		
Trichloroethene	12/15	6.3	2600	541	N4HP10	1.6	5	2.8
Trichlorofluoromethane	2/9	120	2700	1410	N4HP5	1300		2100
Vinyl chloride	12/15	12	10000	1223	42GW05	0.019	2	0.015
M+p-Xylenes	2/2	76.7	418	247	N2GW24			
O-Xylene	2/2	20	188	104	N2GW24	1400		
Xylenes, total	6/18	2.1	160	62	N4HP10 / N2HP15	12000	10000	530
Semivolatile Organics (ug/L)								
2,4-Dimethylphenol	1/3	9	9	9	N2GW27	730		
2-Chloronaphthalene	1/3	3	3	3	42GW05			
2-Methylnaphthalene	3/3	3	20	10	N2GW07			
Naphthalene	2/3	7	14	11	N2GW27	1500		21
Pesticides (ug/L)								
Alpha-BHC	1/2	0.01	0.01	0.01	N2GW27	0.011		
Endosulfan II	1/2	0.0085	0.0085	0.0085	N2GW27	220		
Endrin Ketone	1/2	0.04	0.04	0.04	N2GW27			
Gamma-BHC (Lindane)	1/2	0.01	0.01	0.01	N2GW27	0.052		0.2
Miscellaneous Parameters								
Biological Oxygen Demand (mg/L)	1/1	4.7	4.7	4.7	16GW11			
Total Organic Carbon (ug/L)	1/1	3380	3380	3380	16GW11			
Total Suspended Solids (ug/L)	1/1	883	883	883	16GW11			
Total Petroleum Hydrocarbons (mg/L)	2/3	880	1880	1380	42GW05			

* Secondary Maximum Contaminant Level - 40 CFR Part 143
TT - Treatment Technique; for copper the action level = 1300 ug/L and for lead the action level = 15 ug/L.
Blank: No standard available
(1) Risk-Based concentration (RBCs) - USEPA Region III, March 7, 1995
(2) Federal Maximum Contaminant Levels (MCLs) - Safe Drinking Water Act National Primary Drinking Water Standards, 40 CFR Part 141
(3) North Carolina Groundwater Quality Standards, NCAC, Title 15A, Chapter 2L, Section 0.0202

TABLE 2

SUMMARY OF EVALUATION CRITERIA
OU1, NADEP CENTRAL HOT SPOT AREA GROUNDWATER
MCAS CHERRY POINT, NORTH CAROLINA

- Overall Protection of Human Health and the Environment -addresses whether an alternative provides adequate protection and describes how risks posed through each pathway are eliminated, reduced, or controlled through treatment, engineering controls, or institutional controls.

- Compliance with ARARs - addresses whether an alternative will meet all of the applicable or relevant and appropriate requirements (ARARs), other criteria to be considered (TBCs), or other federal and state environmental statutes and/or provide grounds for invoking a waiver.

- Reduction of Toxicity, Mobility, or Volume through Treatment - is the anticipated performance of the treatment options that may be employed in an alternative.

- Short-Term Effectiveness - refers to the speed with which the alternative achieves protection, as well as the remedy's potential to create adverse impacts on human health and the environment during the construction and implementation period.

- Long-Term Effectiveness and Permanence - refers to the magnitude of residual risk and the ability of an alternative to maintain reliable protection of human health and the environment over time once cleanup goals have been met.

- Implementability - is the technical and administrative feasibility of an alternative, including the availability of materials and services needed to implement the chosen solution.

- Cost - includes capital and operation and maintenance costs, and for comparative purposes 30- year present worth values.

- USEPA/State Acceptance - indicates whether, based on review of the RI and FS Reports and the PRAP, the USEPA and State concur with, oppose, or have no comments on the preferred alternatives.

- Community Acceptance - will be addressed in the Record of Decision following a review of the public comments received on the RI and FS Reports and the PRAP.

TABLE 3

RELATIVE RANKING SUMMARY OF COMPARATIVE ANALYSIS OF ALTERNATIVES
OU1, NADEP CENTRAL HOT SPOT AREA GROUNDWATER
MCAS CHERRY POINT, NORTH CAROLINA

Category of Detailed Analysis	Alternative 3A	Alternative 3B	Alternative 4A	Alternative 4B
Overall Protection of Human Health and Environment	3	4	1	2
Compliance with ARARs	3	4	1	2
Reduction of Toxicity, Mobility or Volume through Treatment	1	1	1	1
Short-term Effectiveness	1	2	1	2
Long-term Effectiveness	1	1	1	1
Implementability	2	4	1	3
Cost	3	4	1	2

Alternative 3A - Extraction/Air Stripping/Liquid-Phase GAC/Discharge to Sandy Branch
Alternative 3B - Extraction/Enhanced Oxidation/Liquid-Phase GAC/Discharge to Sandy Branch
Alternative 4A - Extraction/Air Stripping/Discharge to IWTP or STP
Alternative 4B - Extraction/Enhanced Oxidation/Discharge to IWTP or STP

Rankings of 1 to 4 are in decreasing

USEPA/State Acceptance: The USEPA and NCDEHNR concur with the evaluation of the alternatives and the selection of the preferred alternative (Alternative 4A).

Community Acceptance: Community accepts the selection of the preferred alternative.

TABLE 4

SUMMARY OF ESTIMATED COSTS FOR THE SELECTED ALTERNATIVE
OU1, NADEP CENTRAL HOT SPOT AREA
MCAS CHERRY POINT, NORTH CAROLINA

Capital Costs:	
Groundwater Extraction and Treatment System	$2.77 million
Annual Costs:	
Annual Sampling and Analysis (approx. 15 samples/year)	$9,000
Monthly Sampling and Analysis (approx. 3 samples/month)	$8,000
5-year Site Review (cost annualized over 5 year period)	$4,000
Groundwater Extraction and Treatment System O&M	$162,000
Total Annual Costs	$183,000
Present Worth Analysis:	
30-year Present Worth, with 5% discount value	$5.6 million

TABLE 5

APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS (ARARS) AND TO BE CONSIDERED CRITERIA BCS) FOR THE SELECTED ALTERNATIVE OU1, NADEP CENTRAL HOT SPOT AREA GROUNDWATER MCAS CHERRY POINT, NORTH CAROLINA

Contaminant-specific ARARs and TBCs:

- Safe Drinking Water Act MCLs (40 CFR Part 141) and MCLGs (40 CFR Part 143)
- EPA Ambient Water Quality Criteria (Clean Water Act Section 304)
- Clean Air Act (42 USC 7401)
- North Carolina Air Pollution Control Requirements (NCAC, Title 15A, Subchapter 2D)
- North Carolina Water Quality Standards (NCAC, Title 15A, Subchapter 18C, Section 1500)
- North Carolina Oil Pollution and Hazardous Substances Control Act (GSNC, Chapter 143, Article 21A)
- North Carolina Water Pollution Control Regulations (NCAC, Title 15A, Subchapter 2B)
- North Carolina Groundwater Quality Standards (GWQSs) (NCAC, Title 15A, Subchapter 2L, Section 0200)
- North Carolina Hazardous Waste Management Regulations (NCAC, Title 10, Subchapter 10F)
- Threshold Limit Values (American Conference of Governmental Industrial Hygienists - ACGIH)

Location-specific ARARs and TBCs:

- EPA's Groundwater Protection Strategy (EPA, 1984)
- Federal Protection of Wetlands Executive Order (E.O. 1990)
- Fish and Wildlife Coordination Act (16 USC 661)
- Fish and Wildlife Improvement Act of 1978 (16 USC 742a)
- Fish and Wildlife Conservation Act of 1980 (16 USC 2901)
- North Carolina Groundwater Quality Standards (NCAC, Title 15A, Subchapter 2L)
- North Carolina Control Area Management Act (NCAC, Title 15A, Subchapter 7H)

Action-specific ARARs and TBCs:

- RCRA subtitle C hazardous waste requirements for generators (40 CFR Part 262), transporters (40 CFR Part 263), and treatment, storage and disposal of hazardous wastes (40 CFR Part 264)
- RCRA Land Disposal Restrictions (LDRs) (40 CFR Part 268)
- National Environmental Policy Act (NEPA) (42 USC 4321 and 40 CFR Part 6)
- 0SWER Directive 9355.0-28 (Guidance on Air Strippers at CERCLA Sites)
- North Carolina Air Pollution Control Requirements (NCAC, Title 15A, Subchapters 2H and 2Q)
- North Carolina Water Pollution Control Regulations (NCAC, Title 15A, Subchapter 2B and 2H)
- North Carolina Erosion and Sedimentation Control (NCAC, Title 15A, Subchapter 4)
- North Carolina Well Construction Standards (NCAC, Title 15A, Subchapter 2C)
- North Carolina Hazardous Waste Management (NCAC, Title 15A, Subchapter-13A)
- North Carolina Solid Waste Management (NCAC, Title 15A, Subchapter 13B)
- DOT Rules for Hazardous Materials Transport (49 CTFR Parts 107 and 171 to 179)
- Occupational Safety and Health Administration (OSHA) Requirements (29 CFR Parts 1910, 1926, and 1904)

APPENDIX A

PUBLIC MEETING TRANSCRIPT

STATEMENT OF WORK
MARINE CORP AIR STATION CHERRY POINT
CTO 238

PUBLIC MEETING
CITY OF HAVELOCK
1 HATTERAS AVENUE T-R-A-N-S-C-R-I-P-T
HAVELOCK, NORTH CAROLINA

TRANSCRIPT OF PUBLIC MEETING TAKEN IN THE CITY OF HAVELOCK, CRAVEN COUNTY, NORTH CAROLINA, AT THE HAVELOCK CITY AUDITORIUM, BEGINNING AT 7:10 P.M., TUESDAY, JUNE 18, 1996.

INTRODUCTIONS - CAPTAIN JEFF HEARN
PUBLIC AFFAIRS OFFICE AT CHERRY POINT

PRESENTER MS. LINDA KLINK
BROWN & ROOT ENVIRONMENTAL

COORDINATOR - MS. BETSY HORNE
COMMUNITY RELATIONS SPECIALIST
BROWN & ROOT ENVIRONMENTAL
55 JONSPIN ROAD
WILMINGTON, MAINE 01887-1062

COURT REPORTER - DEBBIE HADDOCK NICHOLS

CAROLINA COURT REPORTERS, INC.
102 Oakmont Professional Plaza
Greenville, North Carolina 27858
TEL: (919) 355-4700 (800) 849-8448
FAX: (919) 355-2100

INDEX OF POSTER BOARD EXHIBITS

CAPTAIN HEARN: GOOD EVENING; ON BEHALF OF BRIGADIER GENERAL KARAMARKOVICH, I AM THE SPOKESMAN FOR CHERRY POINT MARINE CORP AIR STATION. MY NAME IS CAPTAIN JEFF HEARN. WHAT WE ARE DOING HERE TODAY IS CONDUCTING A PUBLIC MEETING FOR COMMENT ON OUR PROPOSED REMEDIAL ACTION PROJECT. FIRST, I WOULD LIKE TO RECOGNIZE A FEW OF THE R.A.B. MEMBERS THAT WE HAVE HERE, WHICH IS THE RESTORATION ADVISORY BOARD; THAT, BASICALLY, IS MADE UP OF COMMUNITY MEMBERS AND TECHNICAL MEMBERS ON ENVIRONMENTAL ISSUES. FIRST WE HAVE NEIL SCARBOROUGH, WHO IS FROM HAVELOCK; PAT MCLELLAN FROM MOREHEAD CITY; AND GRACE EDWARDS FROM ORIENTAL. IN ADDITION, WE HAVE SEVERAL PEOPLE HERE FROM THE ENVIRONMENTAL AFFAIRS DIVISION AND THE STATE OF NORTH CAROLINA. SO IT'S MADE UP OF A WIDE VARIETY OF ENVIRONMENTALISTS THAT BASICALLY MONITOR ALL DIFFERENT TYPES OF ENVIRONMENTAL PROJECTS, BUT SPECIFICALLY THE ONE HERE AT CHERRY POINT AND THE ONE WE ARE GOING TO TALK ABOUT, OU-1. SOME ADMINISTRATIVE NOTES: THERE ARE THREE WAYS TO MAKE PUBLIC COMMENT FOR THIS MEETING. THE FIRST WILL BE BY VOICE. WE HAVE A STENOGRAPHER HERE WHO IS PREPARED TO TAKE DOWN THE TRANSCRIPT OF THIS MEETING. IF YOU ARE GOING TO MAKE COMMENT, WE ASK THAT YOU PLEASE STATE YOUR NAME, SPELL YOUR NAME, AND GIVE US YOUR ADDRESS. GO SLOWLY, BECAUSE WE WANT TO MAKE SURE THAT WE GET IT TO AFFORD YOU A RESPONSE. SECONDLY, THERE IS A CARD AND THERE IS A COMMENT BOX. FEEL FREE, IF YOU DON'T WANT TO SPEAK PUBLICLY, TO FILL

TONIGHT IN TERMS OF THE GROUNDWATER CONTAMINATION. YOU MIGHT WONDER HOW THE GROUNDWATER BECAME CONTAMINATED. THERE ARE THREE MAJOR WAYS THAT THIS HAPPENED. FIRST, FLOOR DRAINAGES WERE JUST DISCHARGED TO DITCHES BEFORE THE INDUSTRIAL WASTEWATER TREATMENT PLANT WAS CONSTRUCTED. SECONDLY, THERE WERE LEAKING UNDERGROUND STORAGE TANKS THAT HAVE SINCE BEEN REMOVED. FINALLY, THERE WERE UNDERGROUND INDUSTRIAL PIPELINES THAT WERE LEAKING, AND THOSE HAVE EITHER BEEN REPAIRED OR ARE IN THE PROCESS OF BEING REPAIRED. IF YOU WILL LOOK ON THE ADJACENT PAGE OF YOUR HANDOUT, IT SHOWS AN OUTLINE OF OU-1 AS A WHOLE AND THE AREA THAT WE ARE CONCERNED WITH, WHERE IT HAD THIS HIGH LEVEL OF GROUNDWATER CONTAMINATION, WHICH WE CALL THE "NADEP CENTRAL HOT SPOT AREA" IN OUR REPORT. THE SUPERFUND REGULATIONS REQUIRE THAT WE HAVE PUBLIC PARTICIPATION IN SELECTING A REMEDY. THIS PRIMARILY OCCURS FROM THE PRAP STAGE OF THE PROJECT, WHICH IS WHERE WE ARE NOW. AS YOU CAN SEE, SEVERAL ACTIVITIES OCCURRED BEFORE THIS POINT IN TIME: BASICALLY, THE REMEDIAL INVESTIGATION OR "RI" AND THE FEASIBILITY STUDIES, THE "FS." WHAT WE DID HERE, WE COMBINED THE RI AND THE FS RESULTS INTO ONE REPORT CALLED A "FOCUSED RI FACTS REPORT FOR OPERABLE UNIT-1 GROUNDWATER" -(INDICATING). THIS IS THE FIRST VOLUME OF THAT REPORT. THERE IS ALSO ANOTHER VOLUME, AND THAT IS THE APPENDICES. THIS IS AVAILABLE IN THE INFORMATION REPOSITORY AS WELL. I'M JUST GOING TO TALK BRIEFLY ABOUT

IS JUST TO GIVE YOU A BASIS FOR COMPARISON. NO ONE IS DRINKING THIS WATER. THIS NEXT POSTER BOARD, AGAIN, SHOWS THE ENTIRE FACILITY AND A CROSS SECTION IN RED SHOWING THE GEOLOGY AND UNDERLYING GROUNDWATER. THE POSTER BOARD I JUST SHOWED WITH THAT CONTAMINATION REALLY IS IN THE UPPER PART HERE (INDICATING), THE UPPER MOST AQUIFER, CALLED THE SUPERFICIAL AQUIFER." IT STARTS ABOUT 10 FEET BELOW THE GROUND SURFACE, AND THE THICKNESS OF THAT WATER BARRIER IS ABOUT 35 TO 40 FEET. UNDER THE SUPERFICIAL AQUIFER IS A CONFINED UNIT WHICH IS A SOMEWHAT IMPERMEABLE BARRIER. UNDERNEATH THE CONFINED UNIT IS ANOTHER WATER BARRIER ZONE CALLED YORKTOWN AND PUNGO RIVER AQUIFER. UNDER THAT WATER BARRIER ZONE IS ANOTHER CONFINED UNIT SURFACING AGAIN AT THE SOMEWHAT IMPERMEABLE LAYER, AND UNDER THIS CONFINED UNIT LIES THE AQUIFER THAT WE NOW REFER TO AS THE DRINKING WATER AQUIFER. SO THE POINT HERE IS THAT THE DRINKING WATER AQUIFER IS ABOUT 200 FEET LOWER THAN WHERE OUR CONTAMINATION IS, SO WE DO NOT HAVE AN EMINENT THREAT. THE REASON WE ARE DOING THIS RESEARCH IS TO PREVENT FUTURE THREATS--FUTURE EXPOSURES. AGAIN, IN TERMS OF THE WHOLE FACILITY, OPERABLE UNIT-1 IS OVER HERE; THE GROUNDWATER FLOW DIRECTION IS TO THE WEST, TOWARD THE EAST PALM OF SLOCUM CREEK (INDICATING). WHAT I JUST COVERED IS THE RI, WHAT TYPES OF CONTAMINANTS WE HAVE, AND HOW FAR THEY HAVE SPREAD. NEXT, I WOULD LIKE TO TALK ABOUT FEASIBILITY STUDIES TO ANSWER THE QUESTION "WHAT

EFFECTIVE IS THE ALTERNATIVE IN DESTROYING A CONTAMINANT; IS IT 50-PERCENT EFFICIENT, 90-PERCENT EFFICIENT? NUMBER 5, ARE THERE ANY SHORT-TERM HAZARDS TO THE COMMUNITY OR TO WORKERS AS THEY ARE INSTALLING THIS ALTERNATIVE? NUMBER 6, IMPLEMENTABILITY; TECHNICALLY, CAN YOU DO IT, AND ARE VENDORS AND SERVICES IN PLACE? NUMBER 7 IS COST. WE LOOK AT DEVELOPING COST ESTIMATES BASED ON TODAY'S DOLLARS OVER THE LIFE OF THE PROJECT. NUMBER 8 IS REGULATORY ACCEPTANCE. AS I HAVE MENTIONED BEFORE, BOTH THE STATE AND EPA ARE ON BOARD WITH THE PREFERRED REMEDY. NUMBER 9 IS COMMUNITY ACCEPTANCE, AND THAT IS WHY WE ARE HERE TONIGHT, IS TO SOLICIT COMMUNITY INPUT. THIS LISTING OF SIX ALTERNATIVES--AND WITHIN THESE ALTERNATIVES, THERE ARE A COUPLE OF HUNDRED--YOU CAN SEE THAT WE DEVELOPED QUITE A FEW OPTIONS THAT WE LOOKED AT BEFORE WE CAME UP WITH A PREFERRED REMEDY. THESE ALTERNATIVES ENCOMPASSED BOTH SENDING OUR CONTAMINATED GROUNDWATER TO AN EXISTING INDUSTRIAL WASTEWATER TREATMENT PLANT ON SIGHT. WE LOOKED AT COMPLETELY TREATING THE GROUNDWATER IN ITSELF. WE LOOKED AT DOING PARTIAL TREATMENT, DISCHARGING THAT EFFLUENT TO THE EXISTING SEWAGE TREATMENT PLANT; AND WE LOOKED AT TREATING THE GROUNDWATER IN PLACE. YOUR HANDOUT SHOWS A TYPICAL RANKING OF ALTERNATIVES--AS YOU CAN SEE IN THIS CASE, THAT ALTERNATIVE 4-A HAD ONES ALL THE WAY DOWN, AND, IN FACT, THAT IS OUR PREFERRED REMEDY, TO EXTRACT THE GROUNDWATER, TREAT IT BY AIR STRIPPING, AND THEN DISCHARGING IT T0 THE

GROUNDWATER IS REMOVED AT THE BOTTOM OF THE AIR STRIPPER. IF YOU REMEMBER, THE SCREENS THAT WE HAD OF THE SOLIDS AND NUISANCE METALS IS BLENDED IN WITH THIS SOLVENT-FREE GROUNDWATER; AND THAT STREAM IS THEN DISCHARGED TO THE EXISTING SEWAGE-TREATMENT PLANT AT CHERRY POINT. THE SOLVENTS THAT ARE REMOVED FROM THE GROUNDWATER ARE DESTROYED IN THIS CATALYTIC OXIDATION UNIT, AND THE CLEAN AIR IS THEN DISCHARGED TO THE ATMOSPHERE. FINALLY, I'D LIKE TO GO BACK TO THE SUPERFUND PROCESS POSTER BOARD. AGAIN, WE HAVE HERE A PRAP STAGE; AND WHAT HAPPENS NOW IS THAT WE ARE S0LICITING COMMUNITY INPUT. WE WILL OFFICIALLY PREPARE A RESPONSE TO THIS SUMMARY, TO DOCUMENT THE COMMENTS WE'VE RECEIVED AND HOW WE ANSWERED THEM. THAT RESPONSE TO THIS SUMMARY WILL BE ATTACHED TO WHAT IS CALLED THE "RECORD OF DECISION" OR "ROD," WHICH DOCUMENTS THE ENTIRE RECORD OF COLLECTION. AFTER THE REMEDY IS SELECTED, WE WILL MOVE TO THE DESIGN PHASE AND BUILD THE PLANT AND START TREATING YOUR GROUNDWATER. ARE THERE ANY QUESTIONS?

MS. RUBY REALINI: I'M SURE A LOT--EVERYBODY HAS BEEN HERE A LONG TIME; THIS IS MY FIRST TIME TO COME. WHEN DID YOU DISCOVER THIS, AND WHAT WAS THE REASON THAT YOU DID, DISCOVER IT? HOW DID YOU DISCOVER IT?

MS. KLINK: WELL, THERE WAS A LANDFILL--

CAPTAIN HEARN: EXCUSE ME; COULD YOU PLEASE FIRST STATE YOUR NAME AND ADDRESS FOR THE RECORD?

THIS AREA.

MS. REALINI: HOW LONG DO YOU THINK THIS PROCESS HAS BEEN GOING ON--THE LEAKAGE?

MS. KLINK: AS I MENTIONED BEFORE, WE ARE REALLY DEALING HERE MORE SO WITH PREVIOUS CONTAMINATION. THE TANKS THAT WE FOUND THE LEAKING HAVE BEEN REMOVED, AND PIPELINES ARE BEING REPAIRED. THERE IS AN INDUSTRIAL WASTEWATER TREATMENT PLANT THAT NOW PRETREATS THIS WASTE THAT BEFORE WERE WASHED AND DRAINED DOWN A DITCH, SO WE ARE REALLY DEALING WITH PREVIOUS CONTAMINATION. THANK YOU.

CAPTAIN HEARN: THANK YOU; ARE THERE ANY OTHER COMMENTS FOR THE RECORD? LET THE RECORD SHOW THERE ARE NO MORE COMMENTS. I AM GOING TO TAKE THIS OPPORTUNITY TO ADJOURN THE MEETING. I WOULD LIKE TO THANK EVERYBODY FOR COMING; AND ON THE BEHALF OF MARINE CORP AIR STATION AT CHERRY POINT, THANK YOU.

MEETING CONCLUDED AT 7:28 P.M.

STATE OF NORTH CAROLINA)

) C-E-R-T-I-F-I-C-A-T-I-0-N

COUNTY OF PITT)

I, DEBBIE HADDOCK NICHOLS, A COURT REPORTER AND NOTARY PUBLIC IN AND FOR THE AFORESAID COUNTY AND STATE, DO HEREBY CERTIFY THAT THE FOREGOING PAGES ARE AN ACCURATE TRANSCRIPT OF THE HAVELOCK PUBLIC MEETING, WHICH WAS TAKEN ON BEHALF OF BROWN AND ROOT ENVIRONMENTAL, BY ME BY STENOMASK, AND TRANSCRIBED BY ME PERSONALLY.

WITNESS, MY HAND AND SEAL, THIS DATE: JUNE 21, 1996.

MY COMMISSION EXPIRES JUNE 26, 2000.

<IMG SRC 97208H>

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